

REMARKS

This amendment is responsive to the Office Action of August 29, 2008. Reconsideration and allowance of the claims 1, 3-7, and 11-13 are requested.

The Office Action

Claims 1, 2, 6, 7, 10, 11, and 12 stand rejected under 35 U.S.C. § 112, first paragraph.

Claims 1-12 stand rejected under 35 U.S.C. § 102 as being anticipated by Cox ("Secure Spread Spectrum Watermarking for Multimedia").

Claim 13 stands rejected under 35 U.S.C. § 103 as being unpatentable over Cox in view of Steinberg (US 6,628,325).

Discussion

The present application addresses the problem of how to provide reliable authentication of images containing areas of flat content. Regions of flat content are problematic because signature bits embedded in such flat content regions tend to be able to be perceived, i.e., distort the image. When signature bits are not derived from regions of flat content, then the regions of flat content could be replaced or altered with the tampering going undetected.

Cox does not anticipate the claims as the Examiner alleges, but rather teaches away from limitations of the present claims. Specifically, the Examiner refers the applicant to page 1675 starting at line 10. Actually, Cox at page 1675, line 8 discusses a prior art method of Koch, et al. Further down in that paragraph, Cox specifically states that the technique of Koch should *not* be used. Cox specifically says that because the variance between the eight frequency coefficients of Koch is small, one would expect that their technique may be sensitive to noise or distortions. Indeed, Cox goes on to say that such shortcomings of Koch are supported by experimental results. Cox goes on to discuss another paper by Koch, et al., but concludes that the other Koch technique is likely to cause noticeable artifacts in the image and be sensitive to noise. Thus, Cox specifically teaches against using the material on page 1675 that the Examiner references.

On page 1676-1678, Cox advocates the use of a frequency-based watermarking method. Rather than dividing the image into blocks, Cox at page 1678, starting at line 5, calls for computing a discrete cosine transform on the entire NxN image and placing the watermark in the n highest magnitude coefficients of the transform matrix.

It is submitted that if the Examiner wants to rely upon information set forth in the Koch article, then the Examiner should cite the Koch article and make it of record so that its full teachings may be understood, analyzed, and discussed. However, even if the Examiner does cite the full Koch article, the above-referenced portions of Cox specifically teach against combining the Cox technique with the Koch technique.

**The Claims Distinguish Patentably
Over the References of Record**

Claim 1 calls for dividing an image that contains at least one region of flat content into a plurality of regions and for signature bits to be generated from each of the plurality of regions including the at least one region of flat content. Cox does not address the flat content problem. Moreover, Cox specifically dismisses the Koch idea of breaking up the image into blocks as being sensitive to noise or distortions. That is, Cox specifically teaches against dividing the whole image into blocks.

Claim 1 further calls for embedding the signature by spreading the signature bits across the whole picture such that the signature bits from all regions can be extracted even if the at least one region of flat content has been replaced by tampering. That is, in the prior art discussed above, flat regions do not contribute to the signature. Hence, in the prior art, flat regions can be altered without the alteration being detected by extracting the digital signature. Because the claimed combination overcomes the flat region problem, it is submitted that **claim 1 and claims 3-7 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 11 calls for means for dividing images that have flat content areas into a plurality of blocks and for generating signature bits from all of the blocks. Again, Cox teaches against the Koch method in which images are divided into blocks. Further, Cox does not suggest generating signature bits from such blocks. Rather,

Cox is directed to a frequency-based method (page 1676, column 1, section III, lines 1-2). Within such a frequency-based method, Cox advocates inserting the watermark into the most perceptually significant regions of the spectrum rather than in perceptually insignificant regions (page 1677, column 1, section A, first paragraph). Accordingly, it is submitted that **claim 11 and claim 13 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 12 again calls for dividing images into regions and for an area of flat content. Cox and Koch do not address the flat content problem. Accordingly, it is submitted that **claim 12** distinguishes patentably and unobviously over the references of record.

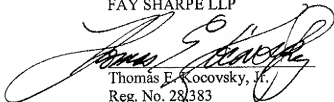
CONCLUSION

For the reasons set forth above, it is submitted that claims 1, 3-7, and 11-13 are not anticipated by and distinguish patentably over the references of record. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned at (216) 861-5582.

Respectfully submitted,

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